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09/715,639	11/17/2000	Kadir A. Peker	MH-5061	8846

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Patent Department  
Mitsubishi Electric Research Laboratories Inc  
201 Broadway  
8th Floor  
Cambridge, MA 02139

EXAMINER

CHEN, WENPENG

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 04/21/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/715,639

Applicant(s)

PEKER ET AL.

Examiner

Wenpeng Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

***Specification***

1. The disclosure is objected to because of the following reason.

-- In page 12, the incorporated U.S. Application 09/406,444 was abandoned. Correction shall be made accordingly to refer to its continuation application.

-- The numeral "211" in line 22, page 8 seems to be corrected as "212". Please check. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 5, 17, 18, 20, and 22-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the following reasons.

There are insufficient antecedent bases for the following limitations.

-- Claim 3 recites the limitation "the low-level features" in line 1.

-- Claim 5 recites the limitation "the high-level features" in line 1.

-- Claim 17 recites the limitation "the output video" in line 2.

-- Claim 18 recites the limitation "the output video" in line 2.

-- Claim 20 recites the limitation "the output video" in lines 1-2.

-- Claim 22 recites the limitation "the output video" in lines 2-3.

-- Claim 23 recites the limitation "the output video" in line 2.

-- Claim 27 recites the limitation "the output video" in the last line.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 6-15, 19, 21, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Abdel-Mottaleb (US Patent 6,424,789.)

Abdel-Mottaleb teaches a method for temporally processing an input video including a plurality of input frames, each of the input frames having an associated input frame play time, and the input video having a total input video play time that is a sum of the input frame play times of all of the input frames (column 1, lines 14-23, 49-67; The time for playing a frame at the normal speed is the input frame play time. The time to play the whole or a selected portion of a video is the total input video play time.), comprising:

-- classifying each of the plurality of input frames according to a content characteristic of each of the input frames; (Figs. 3, 4A and 4B; element 320 of Fig. 3; column 7, lines 27-59)

-- allocating an output frame play time to each of the plurality of input frames that is based on the classified content characteristic of each of the input frames to generate a plurality of

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output frames; (Figs. 3, 4A and 4B; element 325 of Fig. 3; elements 420, 425, 465, 470 in Fig. 4; column 7, lines 53-59; column 8, lines 3-12, 33-45; column 9, lines 36-50; For example, the high and low activity level portions of a video clip are allocated with different frame play times to make a total of 5 minutes period.)

-- wherein the content characteristic is based on low-level features of each of the input frames; (column 7, lines 27-59; The activity such as movement between successive frames is a low-level feature.)

-- wherein the low-level features are selected from a group consisting of motion vectors, color, texture, brightness, contrast, spectral parameters, local and global motion, activity, trajectory, speed, acceleration, object shape, object size, number of objects, number of faces, pitch, volume, tempo, and combinations thereof; (column 7, lines 27-59; Motion and activity are used for low-level features.)

-- wherein the allocating of the play time is dynamically varied while processing the video; (column 8, lines 3-12, 33-45; column 9, lines 36-50; The allocation of play time can be adjusted with different weighting factor.)

-- wherein the allocated output frame play time of each of the output frames is determined by sampling the input frames; (column 8, lines 3-12, 33-45; column 9, lines 11-35; column 9, lines 36-50)

-- wherein the sampling is a down-sampling of the input frames; (column 8, lines 3-12, 33-45)

-- wherein the sampling is an up-sampling of the input frames; (column 9, lines 11-35)

-- wherein up-sampled output frames are interpolated from the input frames; (column 9, lines 11-35)

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-- wherein the sampling is a combination of down-sampling and up-sampling of the input frames; (The passage of column 4, lines 40-41 teaches video clips are stored. The passages in column 8, lines 56-63 and column 9, lines 28-35 teach processed clips are merged. As shown in the above cited passages, a clip is either up-sampled or down-sampled, the whole video data is sampled with the combination of both methods.)

-- wherein the allocated output frame play time of each of the output frames is determined by an output frame rate of the output frame; (column 9, lines 36-50; The allocated output frame play times depend also on the selected mode of fast forward or slow play.)

-- wherein the output frame rate is increased for selected input frames; (column 8, lines 3-12, 33-45; for those clips to be played in the fast forward mode.)

-- wherein the output frame rate is decreased for selected input frames; (column 9, lines 11-35; for those clips to be played in the slow play mode.)

-- measuring the content characteristics of each of the plurality of input frames to determine the classification; (column 7, lines 27-59)

-- partitioning the input video into a plurality of segments and processing the input video on a per segment basis; (column 6, lines 45-53; column 7, lines 27-39; Each clip is divided into shots that are processed.)

-- allocating a total output video play time; and allocating the output frame play times so that a sum of the output frame play times of the plurality of output frames is equal to the total output video play time of the output video. (column 9, lines 47-50; A total output play time of less than 5 minutes is allocated. When the weighting factors are used, the sum of the play time is automatically equal to the total output time.)

Abdel-Mottaleb also teaches a system to implement the method of Claim 1 and thus teach the system of Claim 27 that is corresponding to Claim 1.

*Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Mottaleb (US Patent 6,424,789) s applied to Claim 1, and further in view of Mehrotra et al. (US patent 6,665,423.)

Abdel-Mottaleb teaches Claim 1. However, it does not teach the feature related to the recited high-level features.

Mehrotra teaches a video description system and method comprising:

-- classifying the video using content characteristic,

- wherein the content characteristic is based on high-level features of each of the input frames; (column 2, lines 30-49; column 4, lines 3-17; column 6, lines 7-55; column 10, lines 17-21; Fig. 1; Both low-level and high-level temporal semantic characteristics are used for video description.)

- wherein the high-level features are selected from a group consisting of genre, dramatic intensity, humor content, action level, beauty, lyricism, musical intensity, educational quality, profundity, nudity, linguistic class, and combinations thereof. (column 2, lines 30-49;

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column 4, lines 3-17; column 6, lines 7-55; column 10, lines 17-21; Fig. 1; The high-level temporal semantic characteristic includes action level generated, for example, in elements 60 and 70 of Fig. 1.)

It is desirable to have an object-oriented video description for facilitating humans to edit a video. (Mehrotra, column 1, lines 36-51) It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Mehrotra's method of using both low-level and high-level temporal semantic characteristics to classify video processed in Abdel-Mottaleb's system for allocating play time for each classified video segment because the combination facilitates segmenting a video based more on how humans process a video to provide a better video editing.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abdel-Mottaleb (US Patent 6,424,789) s applied to Claim 15, and further in view of Park et al. (US patent 6,597,738.)

Abdel-Mottaleb teaches Claim 15. However, it does not teach the feature related to the recited statistical moment.

Park teaches a video multi-media database and search system using motion description, comprising:

-- using motion characteristics to classify and index video in which the system comprises a step of computing a statistical moment for the measured characteristics to determine the classification of the video. (column 22, lines 35-50; column 24, lines 43-49; Claim 1)

It is desirable to have a better video multi-media database and search system. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to combine Abdel-Mottaleb's teaching for allocating more play time (slow motion) for video frames having



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more motion activity and Park's teaching of improved analysis of the motion activity with moments computed from motion histograms because the combination provides a better edited summary of video for video multi-media database and searching.

*Allowable Subject Matter*

9. Claims 17-18, 20, and 22-26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter. For The prior art fails to teach the method of Claim 17 which specifically comprises the following feature in combination with other recited limitations:

-- wherein the allocation of play time is **based on a constant level of motion activity in the output video.**

The prior art fails to teach the method of Claim 18 which specifically comprises the following feature in combination with other recited limitations:

-- wherein the allocation of play time is **based on a guaranteed minimum level of activity in the output video.**

The prior art fails to teach the method of Claim 20 which specifically comprises the following feature(s) in combination with other recited limitations:

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-- wherein **still frames are selected** for the output video when **the allocated output frame play time exceeds a temporal Nyquist limit.**

The prior art fails to teach the method of Claim 22 which specifically comprises the following feature(s) in combination with other recited limitations:

-- wherein the allocated play time of a particular frame can **range on a continuum from zero time to a length of time of the output video.**

The prior art fails to teach the method of Claim 23 which specifically comprises the following feature(s) in combination with other recited limitations:

-- wherein the allocation of play time is **based on a motion activity in the output video,** and a measure of motion activity is an average of magnitudes of motion vectors of the frames.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 703 306-2796. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703 308-7452. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications. TC 2600's customer service number is 703-306-0377.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4700.

Wenpeng Chen  
Primary Examiner  
Art Unit 2624

April 19, 2004

A handwritten signature in black ink, appearing to read 'Wenpeng Chen', written in a cursive style.